

What is claimed is:

1. A transmission system, comprising:
  - a hardware monitor adapted to collect performance information about associated hardware components;
  - a system information database adapted to refresh based on the collected performance information and to generate system status information; and
  - a hardware controller adapted to selectively communicate alarm change messages to one or more of the hardware components based on the collected performance information and the system status information.
2. The system of claim 1, wherein the performance information includes alarm indications and error counts.
3. The system of claim 1, wherein the hardware controller comprises:
  - a change response generator; and
  - one or more system hardware port controllers adapted to couple to the change response generator.
4. The system of claim 1, further comprising a notification device adapted to transmit collected performance information and system status information to one or more associated remote units.
5. The system of claim 4, wherein the notification device is an embedded operations channel.
6. The system of claim 1, wherein the one or more hardware components comprise one or more hardware drivers.
7. The system of claim 6, wherein the one or more hardware drivers comprise one or

more of transport hardware drivers, a light emitting diode driver, and a power feed driver.

8. The system of claim 6, wherein the one or more hardware drivers comprise one or more of a digital subscriber line driver, an E1 driver, a dataport driver, a light emitting diode driver, and a power feed driver.

9. The system of claim 1, further comprising an application interface that interfaces between the hardware controller and the one or more hardware components.

10. A local transmission system, comprising:

a detection device adapted to identify alarm information within the local transmission system and to identify received alarm information from one or more associated remote units;

a system information database adapted to store system status information and to refresh based on alarm information identified by the detection device; and

a hardware controller adapted to selectively communicate alarm change messages to one or more hardware components based on the alarm information and the system status information.

11. The system of claim 10, wherein the hardware controller comprises:

a change response generator; and

one or more port controllers coupled to the change response generator.

12. The system of claim 10, wherein the alarm information includes alarm indications and error counts.

13. The system of claim 10, wherein the detection device is an embedded operations channel.

14. The system of claim 10, wherein the one or more hardware components comprise

one or more hardware drivers.

15. The system of claim 6, wherein the one or more hardware drivers comprise one or more of transport hardware drivers, a light emitting diode driver, and a power feed driver.

16. A transmission system, comprising:

a system information database; and

a hardware module adapted to collect performance information about associated hardware components and to interface between the associated hardware components and the system information database;

wherein the system information database is adapted to refresh based on system performance information and to generate system status information; and

wherein the hardware module selectively communicates alarm change messages to one or more of the hardware components based on the collected performance information and the system status information.

17. The system of claim 16, wherein the one or more hardware components comprise one or more hardware drivers.

18. The system of claim 17, wherein the one or more hardware drivers comprise one or more of transport hardware drivers, a light emitting diode driver, and a power feed driver.

19. The system of claim 16, wherein the hardware controller comprises:

a change response generator; and

one or more port controllers coupled to the change response generator.

20. The system of claim 16, wherein the performance information includes alarm indications and error counts.

21. A transmission system, comprising:

- a system information database adapted to generate system status information;
- a transport hardware monitor adapted to collect performance information about associated transport hardware components;
- a transport hardware controller;

wherein the transport hardware controller selectively communicates with one or more hardware drivers to effect a configuration change based on the collected performance information and the system status information;

wherein the hardware monitor is adapted to query the one or more hardware drivers and to detect alarm conditions; and

wherein the one or more hardware drivers are each adapted to communicate with the transport hardware controller via an application interface.

22. The system of claim 21, wherein the one or more hardware drivers comprise one or more of an E1 driver, a digital subscriber line driver, and a dataport driver.

23. The system of claim 21, wherein the transport hardware controller comprises:

- a change response generator; and
- one or more port controllers coupled to the change response generator.

24. The system of claim 23, wherein the change response generator includes a message queue adapted to receive alarm change messages generated by the system information database.

25. A method of hardware management for a transmission system, the method comprising:

- detecting an alarm indication;
- performing information calculations on the alarm indication;
- refreshing an associated system information database with the information calculations and the alarm indication;

distributing an alarm change message to one or more of a hardware controller and a notification device;

receiving the alarm change message and determining the hardware to be changed based on the alarm change message and the current state of the associated alarm; and requesting a change to the current configuration of hardware via hardware drivers.

26. The method of claim 25, wherein determining the hardware to be changed based on the alarm change message comprises determining how to operate based upon the current system conditions on a port-by-port basis.

27. The method of claim 25, further comprising notifying one or more associated remote units of the change in alarm state.

28. The method of claim 27, further comprising:  
detecting the change in alarm state at one or more associated remote units;  
storing the change in alarm state information in the one or more associated remote unit's system information database;  
distributing an alarm change message to a remote unit hardware controller;  
receiving the alarm change message and querying the database as to which state the alarm is in currently; and  
changing the current configuration of the one or more associated remote units' hardware via associated hardware drivers.

29. The method of claim 25, wherein distributing an alarm change message to a hardware controller comprises posting the alarm change message to a message queue.

30. The method of claim 29, wherein posting the alarm change message to a message queue causes the hardware controller to execute.

31. The method of claim 25, wherein detecting an alarm indication comprises

periodically checking hardware components for state changes.

32. The method of claim 25, wherein detecting an alarm indication comprises checking hardware components for hardware alarms and error counts.

33. The method of claim 32, further comprising accumulating error counts and recording alarm indications based on user-defined requirements.

34. The method of claim 25, wherein refreshing an associated system information database with the information calculations and the alarm indication, comprises:

passing the alarm indication and associated information calculations to the system information database;

receiving the alarm indication and associated information calculations; and

storing the current alarm indication and associated information calculation in one or more tables for subsequent retrieval.

35. The method of claim 34, wherein storing the current alarm indication and associated information calculations comprises time stamping the current alarm indication.

36. The method of claim 25, wherein performing information calculations on the alarm indication includes calculating performance statistics and generating alarms for each of the ports in the transmission system based on user-defined requirements.

37. The method of claim 25, wherein detecting an alarm indication comprises detecting one or more of remote loss of signal, loss of sync word, and power feed short.

38. A method of hardware management, comprising:

receiving notification of a change in alarm state from a remote unit of a transmission system;

storing the change in alarm state information in a system information database;

distributing an alarm change message to a hardware controller;  
receiving the alarm change message and querying the database as to which state  
the alarm is in currently; and  
changing the current hardware configuration via associated hardware drivers.

39. The method of claim 38, wherein receiving notification of a change in alarm state comprises receiving notification of one or more of a remote loss of signal, loss of sync word, and a power feed short.

40. The method of claim 38, wherein storing the change in alarm state information in a system information database comprises time stamping the change in alarm state information.

41. The method of claim 38, wherein distributing an alarm change message to a hardware controller comprises posting the alarm change message to a message queue.

42. The method of claim 41, wherein posting the alarm change message to a message queue causes the hardware controller to execute.

43. The method of claim 38, wherein changing the current hardware configuration via associated hardware drivers comprises changing the current hardware configuration on a port-by-port basis.

44. A method of hardware management at a local unit of a transmission system, the method comprising:

detecting an alarm indication from transport hardware of the local unit;  
processing the alarm indication for performance information calculations;  
passing the alarm indication to an associated database;  
receiving the alarm indication, time stamping the alarm indication, and storing the alarm indication for later retrieval;

distributing an alarm change message that indicates the state of a particular alarm has changed to a hardware controller of the local unit,

distributing the alarm change message an embedded operations channel for reporting to associated remote units; and

executing configuration changes to the transport hardware of the local unit based upon all of the alarms existing in the transmission system and the current transmission system configuration.

45. The method of claim 44, wherein detecting an alarm indication from transport hardware of the local unit comprises periodically querying the transport hardware of the local unit for alarm signals and state changes.

46. A method of hardware management at a local unit of a transmission system, the method comprising:

receiving an alarm update from an embedded operations channel associated with a remote unit;

storing the alarm update information in an associated database;

distributing an alarm change message, that indicates the state of a particular alarm has changed, to a hardware controller;

receiving the alarm change message;

querying the database as to which state the alarm is in currently; and

executing configurations to the transport hardware of the local unit based upon all of the alarms existing in the transmission system and the current transmission system configuration.